

EPA Comment Number (from draft BHHRA)	Section and Page Number	Comment	LWG Action	Reviewer (CDM) Response/Comment
General-1	Throughout Document	Ingestion rates should be categorized as low, moderate, and high.	LWG changed from high, higher, and highest classifications to rates, citing the programmatic work plan.	LWG had no problem with high, higher, highest even though they were not in the programmatic work plan. Is use of rates acceptable, or do we want to include some descriptors? Descriptors would require some definitions be included where exposure parameters are discussed, with some repeat in later sections.
General-6, 36, 41	Throughout Document	References to domestic water supply use as	Used the term "hypothetical" when referring to the LWR as a domestic water source when EPA suggested the use of "potential".	Much of the language describing this exposure was revised as seems appropriate. Is the term "hypothetical" acceptable given the revised text?
General 12(ii)	Tables 3-270 through 3-274	Comment directs LWG to make exposure duration for the recreational and tribal fishers and recreational beach users 6 years as a child and the remaining period as an adult.	LWG provides two separate scenarios - one for adult and one for child which adds the child risk to the adult risk (which was modified for 24 years versus 30 years in the adult-only scenario).	Two scenarios added - Adult ED for RME is 24 for RME and 9 for CT. Child ED is 6 for both. CTE is a bit odd – total ED of 15 years, but this approach should be conservative. ED of 9 years in central tendency for people at one residence and not specifically for adults. CTE is not of great consequence for defining unacceptable risks or PRGs.
General 12(ii)	Table 4-1, Table 5s	Comment directs LWG to evaluate cPAHs using age-dependent cancer slope factors. 10 for exposures before 2 years; 3 for exposures between 2 and 16 years of age.	LWG says that for cPAHs, early life exposures using age-dependent adjustment factors were included for both the child and the combined child/adult scenarios. The adult only scenarios were not changed.	Don't see where age-adjustments are shown or used, although they are noted in the notes at the bottom of the appropriate tables.

20	ES.5	Replace "95% Upper Confidence Limit (UCL) or Maximum" with "RME exposure"	LWG did not make the change, claiming that the EPCs were described in a factual manner. They further use this description in 3.0: "EPCs were calculated for the 95% upper confidence limit on the arithmetic mean (95% UCL) and the arithmetic mean for each exposure area. In some exposure areas, the maximum concentration was used instead of the 95% UCL. Therefore, the EPCs are referred to as the 95% UCL/max and mean throughout this BHHRA."	<p>Is the continued use of 95% UCL/max and mean throughout the BHHRA acceptable. If not, we shouldn't use RME exposure since it is redundant. Recommend using RME and CTE EPC throughout, if we are not going to make them use the 95%UCL/max for both. Otherwise we could just use EPC. Risk assessment should address use of maximum concentrations in the uncertainty section.</p> <p>Also note that the term "95%UCL/Max scenario" is also used. This term is clearly wrong and needs to be changed in text, tables and figures.</p>
23	ES. 5	Remove statement referring to regional tissue data.	LWG did not remove the reference about regional tissue data but added a sentence stating that "concentrations are higher at the Site than in the regional tissue."	Incorporation of regional data is still difficult. Now, the text reaches no useful conclusions, and may only add confusion. Moreover, some text clearly implies that regional data can be used as background. Recommend either deleting altogether, or adding text for proper perspective. E.g. because these regional data were collected because of known or suspected contamination, they cannot be directly compared to PH.
27	Section 1.0	Modify the sentence to show that an ARAR evaluation is in Section 6.	LWG did not do an ARAR evaluation in the BHHRA.	Apparently, ARAR evaluation was put into the RI? Perhaps text should cite location of the evaluation in this document.

28	Section 1.0	Delete the text in the third paragraph suggesting that the report is somehow different from other risk assessments because EPA directed the use of conservative assumptions.	LWG modified it but did not delete the paragraph.	Is current language acceptable? Some of the text (e.g. upper-bound literature values) is not correct. Literature values are of course upper percentile, not ceiling values. Recommend deleting the paragraph, or adding proper perspective.
26	ES.6	Eliminate "The evaluation of shellfish consumption was done at the direction of the EPA..."	Was not deleted although the remainder of the statement was.	Is leaving in the phrase "at the direction of the EPA" acceptable here and in the rest of the document? [Perhaps EPA should put in "LWG refused to include this pathway until directed by EPA", which is also factual :)]. Also, the word "appropriately" was left out of the language describing the range of fish ingestion rates used in the BHHRA. Is this omission acceptable?
38	Table 2-13	Comment associated with the elimination of some data (outside of the study area) for COPC screening (Similar to 194)	LWG did not include the data or re-do the COPC screening based on agreement during October 15, 2010 meeting. They did include a new section (Section 2.13 in Attach F6) where they discuss the Uncertainty associated with it.	LWG approach seems adequate.
52	Section 3.4	Same as above Comment 20 reviewer directs LWG to replace the term 95% UCL/max EPC with RME EPC.	LWG did not make the change but clarified language.	Same as above: Is it acceptable to use of 95% UCL/max and mean throughout the BHHRA when referring to EPCs?

	Table 3-30			Intake Equation not legible on PDF version.
63	Various	Compounding Uncertainty	Removed statements about compounding uncertainty from document	Done pretty well, but a couple of minor instances of such language were noted. E.g. "conservative parameters compound to provide an upper range estimate of exposures". Such language is still incorrect, but at least isn't as difficult as before.
93	map 5-7 - 5-14	Add cancer risks and HIs for each river mile	Added HQ, not HI.	HIs by target organ would be more informative overall, which is what EPA was thinking when making this comment.
95	Section 5.2.5.3	Delete discussion on comparison to regional risk levels.	LWG did not delete but added clarification.	Is language acceptable? Text seems out of place/context as is.
111	Section 7.1.3	EPA asks for tables showing data used and support for the "factor of 10" statement.	References Tables F6-1 +	The red-line Attachment F6 does not provide any tables although it does reference them. CDM wasn't able to check the tables.

148	Section 7.2.5.3	Revise as shown: " <u>Although fishers normally fish and/or collect those resources that are available in their area</u> , it is not known to what extent fishers would substitute alternative local types of shellfish if the shellfish in the survey were not available. "	LWG deleted the end of the sentence but did not make the addition as requested.	Is ignoring the addition acceptable? Seems like the kind of statement that LWG makes throughout the document when it suits them.
149	Section 7.2.5.3	Delete sentence starting with "However, for freshwater habitat only ..."	Deletion was not made: LWG states that sentence is factual	Is retaining sentence acceptable? Many statements are factual, but may be irrelevant to the subject at hand or just misleading. In this case, it's not at all clear that national data on freshwater shellfish consumption is relevant – much of the country has no freshwater habitat suitable as a resource for collection of shellfish. Recommend either deleting, or adding appropriate text for perspective.
168	Section 7.4.2	EPA wanted reference to "background" data for biota eliminated since there is no background data.	LWG did not eliminate - just revised and still has reference to regional levels suggestive of background.	Text does not appear to be acceptable. Recommend either deletion or substantial re-write to add proper perspective.

186	Section 8.1.2	Same as above: Replace "95% Upper Confidence Limit (UCL) or Maximum" with "RME exposure" on Tables and Figures	LWG did not make the change but clarified that ranges are based on 95% UCL/maximum and mean	Again, is use of 95% UCL/max and mean throughout the BHHRA acceptable when referring to EPCs?
194	Attachment F2	Comment says that the EPA did not agree to eliminate the data outside of the study area for COPC screening.	LWG did not include data from outside the Study Area, and thus did not re-do the COPC screening based on agreement during October 15, 2010 meeting. They did include a new section (Section 2.13 in Attach F6) where they discuss the Uncertainty associated with not using data outside the study area in screening..	Is LWG approach appropriate? Screening data outside the Study Area seems unlikely to add additional COPC.
197	Attachment F2 Tables F2-8 through F2-13	Comment associated with eliminating non-detects where the detection limit is higher than the highest detected value. They should have done an analysis to see the effect it would have had on the quantitative assessment.	LWG excluded these results per EPA's comments on the Round 2 Report. They discussed the uncertainty associated with excluding them in Section 2.14 of Attach F6, and also in Section 6, which provides the uncertainty analysis.	LWG approach seems adequate. Recommend no changes.

General Spot Checking for Accuracy	Table ES-1			Check numbers for Domestic User, Combined Adult/Child. ES-1 shows 2.E-04 for the Max CT Cancer Risk - doesn't match up to numbers in Table 5-62.
General Spot Checking for Accuracy	Table ES-1			Table ES-1 Direct Exposure to Beach Sediment, Breastfeeding infant. The description for Breastfeeding Infant should probably be expanded to say "Breastfeeding infant of Dockside Worker" to differentiate more clearly from the other breastfeeding scenarios.
General Spot Check for Accuracy	Part D tables			PAH were assessed for dermal exposure (both sediment and surface water).
Additional Comments	Throughout			<p>Discussion of uncertainties is still sprinkled throughout the document. An agreement was reached to consolidate such discussion into a single section.</p> <p>Also, language is still slanted in many instances, and grammar and syntax are somewhat strained in many parts of the document, and readability could be improved. While this point is minor overall, if text is to be revised, such corrections would seem appropriate.</p>
Additional Comments	Throughout			Recommend change CT to CTE for parallel construction.
Additional Comments	Various	Use of term "upper bound"		Upper-bound usually refers to a ceiling or not-to-be-exceeded value, not an upper-range percentile. Recommend using upper-range throughout

Additional Comments	Figure E-2, ES, Page 8			Here and elsewhere, it isn't useful to report RME and CTE combined. These scenarios should be shown separately, if CTE is shown at all. Also, the text indicates that both RME and CTE are shown, but the table suggests only RME results are presented. It appears that the text is correct.
Additional Comments	Table ES-1, ES, Page 11			Table is not useful. Need a succinct summary table, or series of tables.
Additional Comments	Figure ES3, ES, Page 15			Figure again reports both RME and CTE combined. Recommend showing RME only, or show the two in separate figures.
Additional Comments	ES, Page 16			Discussion of cooking reductions is incomplete. Recommend deletion or more general summary that provides proper perspective. Perhaps, "Some preparation and cooking methods could reduce exposure to some COPC, while others are likely to have little or no affect. Because typical preparation and cooking methods are not known for the Study Area, quantitative risk estimates did not account for this aspect of fish consumption exposures."

Additional Comments	Page 20			Text at top of the page implies background for tissue concentrations. Recommend deleting. In general, discussion of regional fish tissue concentrations are difficult, because they don't have any direct tie-back to PH, but continue to suggest they can be used as background. Text might be revised in the body of the document, but is not of consequence for the ES and should be eliminated from this section.
Additional Comments	Figure ES-2, Page 20			Figure needs geographic references.
Additional Comments	Table, Figures and Text			Use of the term 95% UCL/Max Scenario is incorrect and needs to be changed throughout the document. RME and CTE are not defined based solely on calculation of EPC. (actually EPC should be the same for both) When referring to a scenario, change should be made to RME and CTE scenarios.
Additional Comments	Section 2.3.1, Page 41			Is any additional explanation needed for the TCE oral slope factor based on relatively recent toxicity assessment?
Additional Comments	Section 3.3.2.5, Page 56			In-water sediment exposures are oddly described. Exposure would seem to minimal because sediments are likely to be washed off during swimming, not so much because we lack methods. The latter implies that if we had methods, exposures might be important. Recommend that language be changed to read, "... under water, and sediment would likely either not adhere to skin, or be quickly washed off."

Additional Comments	Page 61, last sentence in first paragraph			Recommend revising the last sentence that starts with “Even if collection ...” to “Currently, the extent of consumption of crayfish harvested from the Study area, if any, is not known.” The sentence preceding is sufficient to indicate that crayfish are used for both bait and “possibly” consumption.
Additional Comments	Section 3.5.1, Page 72			Some uncertainties language is included in this subsection. Is some such discussion outside of Section 6 acceptable?
Additional Comments	Section 3.5.1.5.3, Page 76, 2 nd paragraph			Revised language on relative consumption rates is confusing. Recommend it be changed to <u>clearly</u> state that the 70 and 28 percent numbers are percent of diet from the study area required to equal 142 g/d.
Additional Comments	Section 3.5.1.6.3, Page 79, top of page			I would imagine that sediment could adhere to all fishing gear, not just anchors and hooks. Recommend changing text to read “Contact with in-water fishing gear ...”
Additional Comments	Section 5.1.2, Page 92			Equation for exponential risk calculations should be included in this section (probably should not be referred to as a model?) Also, risks estimated using the exponential algorithm should be called out in the text.

Additional Comments	Section 5.1.3, Page 93			Adjustment factors are not actually provided in the text, and are not possible to find (or at least difficult to find) in the Part D tables. Moreover, the text is confusing and one can't tell what was actually done. cPAH are locally important, so risk calculations should be clear and accurate.
Additional Comments	Section 5.2.1, Page 94			Again, dermal exposure was estimated for PAH for both surface water and sediment pathways for relevant receptors. Also, discussions of beach exposure pathways need to include geographic references. At "04B024" is not adequate.
Additional Comments	Section 5.2.5.3, Page 118			Given changes to the text, the discussion seems to be irrelevant – different species, different sources, etc. add up to "may not be relevant to the Study Area". Begs the question of why include it. Apparently some information is included in the RI. If that information is to stay, perhaps just a reference to the information would be acceptable. One could argue that it's sediment that is the key medium and that background is addressed as an important consideration for remediation. Tissue just doesn't seem to factor in. Finally, no mention is made that other studies were also directed toward possibly contaminated reaches of rivers. Again, why include?

Additional Comments	Section 5.2.6.1, Page 121, 1 st paragraph			Discussion of undepurated clam tissue is incomplete and does not convey the uncertainty appropriately. Text needs to indicate that the comparison of depurated and undepurated clam tissue using available data is not useful.
Additional Comments	Section 6.0, Page 134			Mention of “compounding” is not accurate.
Additional Comments	Section 6.1.2, Page 136			Discussion of sources outside of the Study area seems incomplete, particularly for salmon, which likely pick up some contaminant load while at sea. Seems as though the text should indicate that salmon returning to the Queets, etc. integrate sources for the entire life-cycle of the fish, from hatching in the Queets, etc. to return and spawning.
Additional Comments	Various			“chemicals potentially posing unacceptable risk” is clumsy. Perhaps “chemicals that may pose unacceptable risk” would be better.
Additional Comments	Section 6.1.4, Page 138			Revised discussion, and in fact the entire text of this subsection seems incorrect. Data available from the site are not sufficient to make comparisons between depurated and undepurated clam tissues, and one cannot make a blanket statement that using undepurated clam tissue is “health-protective”. If BSAF is greater than 1, the reverse could be true. Discussion should be re-written.

Additional Comments	Section 6.1.13, Page 140			Discussion of NDs above max detection is pretty weak. Some mention of reasons for high DLs and likelihood that material was actually present at elevated concentrations should be included. As written, the text is not very useful. Some of this material may be included in Attachment F2.
Additional Comments	Section 6.2.3.1, Page 147			The discussion of the breast milk pathway is important, but seems an uncertainty than an interpretation of risk assessment results. Perhaps a better way to address would be in the discussion of the exposure pathways, then later in the conclusions. The real focus, it seems, should be that the pathway is presented solely to provide information to women and families about whether to consume fish from PH. The information on the health value of breast feeding seems a separate but critical issue to include in the interpretation.
Additional Comments	Section 6.2.6.1, Page 151			Discussion of in-water sediment exposure is not quite complete. Added text needs to explain how/why the approach taken (each ½ mile section separately) may (or may not) overestimate risks. As written, the discussion is not very informative.

Additional Comments	Section 6.2.5.3			This section is much improved, but still lacks clarity. Language is strained in some sections. It's seems acceptable to point out and thoroughly discuss uncertainties in fish ingestion rates, since this parameter is key to PRGs being used in the FS. As written, the text seems in several places to be trying to say things between the lines. Recommend substantial re-write of this section.
Additional Comments	Section 6.2.6.4			This section is marginally improved, but still does not provide an objective evaluation of preparation and cooking methods. The evaluation needs to describe all cooking methods, include mention of subpopulations that might consume fish/shellfish (e.g. API) and conclude that reductions due to preparation and cooking are likely to vary substantially across species, fisher populations and prep/cook methods.
Additional Comments	Section 6.3.2, Page 165			Thallium was added as a chemical sans toxicity criteria. It is only mentioned in this section, with no evaluation of impacts on risk assessment.
Additional Comments	Section 6.3.4, Page 166			Discussion of chromium (VI vs. III) is incomplete and difficult to follow. RI should have a section on chromium that can be cited and summarized, or the discussion needs to be improved. Cr(VI) is not the typical form in most instances, but some exceptions occur. Need to focus discussion on these instances and how they apply (or not) to PH.
Additional Comments	Section 6.3.5			The discussion of PCB toxicity criteria needs some balancing. Uncertainties are real and substantial, but they need proper perspective.

Additional Comments	Section 6.3.6			Discussion of dermal toxicity factors is incomplete. Text needs to include discussion of relative versus absolute absorption and how that plays into estimation of risks for “chemicals that may pose unacceptable risk”.
Additional Comments	Section 6.4.1			In keeping with other sections where LWG provides quantitative estimates, text should indicate that HIs could underestimate non-cancer hazards by as much as a factor of 3.5.
Additional Comments	Section 6.4.3			LWG continues to discuss regional tissue concentrations in a subsection titled “Risks from Background”
Additional Comments	Sections 7 and 8			Summary and Conclusions sections aren't too bad, but they could use some better attention to the uncertainties analysis in some cases, and may need to be revised to reflect needed revisions to other sections.